

RE: 2105-N

April 1, 2021

Certified Mail 7016 2070 0000 2490 5438  
Return Receipt Requested

Doug Mandeville, Project Manager  
Fuel Cycle Facilities Branch  
Division of Fuel Cycle Safety and Safeguards  
Office of Nuclear Material Safety  
U.S. Nuclear Regulatory Commission  
Two White Flint North, Mail Stop 5A10  
Rockville, MD 20852-2738

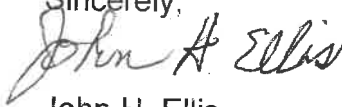
RE: License No. SUB-1010; Docket No. 40-8027  
Ammonium Nitrate Fertilizer Program  
2020 Completion Report

Dear Mr. Mandeville:

Please find enclosed one (1) copy of the 2020 Completion Report for the Ammonium Nitrate Fertilizer Program conducted by Sequoyah Fuels Corporation (SFC).

In accordance with License No. SUB-1010 requirements, the report describes the application of facility produced ammonium nitrate fertilizer on SFC lands near Gore, Oklahoma, and the results obtained from comprehensive soil and vegetation monitoring programs. During 2020 no ammonium nitrate fertilizer was applied; however pre-season soil, post-season soil and vegetation monitoring was completed.

Should you require further information, please contact me at 918-489-5511. (Ext. 226)

Sincerely,  
  
John H. Ellis  
President

Enclosure

cc: Lynzie Chan (ODEQ)

*AMMONIUM NITRATE  
FERTILIZER APPLICATION PROGRAM*

*2020 Completion Report*

*License SUB-1010; Docket 40-8027*

*April 1, 2021*

## TABLE OF CONTENTS

1.0	INTRODUCTION .....	1
2.0	APPLICATION AREA .....	1
3.0	AMMONIUM NITRATE APPLICATION.....	1
4.0	PROGRAM MONITORING RESULTS.....	2
4.1	Soil .....	2
4.2	Vegetation .....	2
5.0	FORAGE MANAGEMENT PROGRAM.....	2

## ADDENDA

<u>TABLES</u>	<u>DESCRIPTION</u>
1	Projected 2021 Ammonium Nitrate Fertilizer Application
2	Soil Nitrate Analyses
3	Background Soil Analyses
4	Annual Post-Season Analyses
5	Forage Analysis

<u>FIGURES</u>	<u>DESCRIPTION</u>
1	Fertilizer Application Sites

## 2020 FERTILIZER PROGRAM COMPLETION REPORT

Sequoyah Fuels Corporation  
Gore, Oklahoma

### 1.0 INTRODUCTION

Source Material License SUB-1010, issued to Sequoyah Fuels Corporation (SFC), authorizes the application of fertilizer onto SFC owned or controlled lands for the production of forage, utilized by cattle for grazing, or for growing crops that are not used directly as human food, such as hay or seed production. On October 1, 2015 a new Oklahoma Pollution Discharge Elimination System (OPDES) permit became effective. This new OPDES permit includes sampling and application requirements for the fertilizer program. In accordance with license and permit requirements, this completion report describes the 2020 Fertilizer Application Program.

Fertilizer was not applied during 2020. Therefore, some of the monitoring typically completed was not done. The 2021 schedule for the Ammonium Nitrate Fertilizer Program is provided in Table 1.

### 2.0 APPLICATION AREA

Figure 1 shows the location of the fertilizer application sites.

### 3.0 AMMONIUM NITRATE APPLICATION

Ammonium nitrate fertilizer was not applied during 2020.

## 4.0 PROGRAM MONITORING RESULTS

### 4.1 Soil

The 2020 pre- and post-growing season soil samples for the fertilizer application areas were collected in March and November, respectively. Since there was no application of ammonium nitrate fertilizer no mid-season soil samples were collected. The analysis results for these sampling events are provided in Table 2. The top six inches of soil was characterized for nitrate content by collecting and compositing at least twenty samples from different locations in the Agland tract (one-inch diameter cores). In addition, profile samples were collected from one location in the Agland tract at six inch increments from surface to 48".

Soil samples were also collected as required by the OPDES permit. This permit requires that background soil samples be collected from each land application site and be analyzed for soil pH; the nutrients Total Kjeldahl Nitrogen, nitrogen, ammonia, nitrate, potassium and phosphorus; and the metals included in 40 CFR 503, "Standards for the Use or Disposal of Sewage Sludge." The analyses for background sampling are included in Table 3. Figure 1 shows the location of each fertilizer application site. The analyses of post season samples collected on November 04, 2020, from each land application site that typically receives fertilizer solution are included in Table 4.

### 4.2 Vegetation

Forage samples were collected and analyzed from the Agland area only. Analytical data for the forage cuttings from the Agland is provided in Table 5.

Forage collected during 2020 had elevated molybdenum concentrations. SFC determined that use of the hay should be restricted.

## 5.0 FORAGE MANAGEMENT PROGRAM

Hay was harvested two times during 2020. Hay yields and harvest were dependent upon the weather and forage growing conditions. Approximately 673 round bales were produced from the SFC property. Round hay bales average approximately 1040 pounds.

The Oklahoma State University Extension Service continues to provide oversight of the land application program.

### Projected 2021 Ammonium Nitrate Fertilizer Application

Date: 01 April 2021 Task  Milestone 

Page 1

### Soil Nitrate Analyses (mg/kg)

[illegible]

Pre-Season Results (Collected on 03/12/2020)

Location	0-6C"	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"	42-48"
----------	-------	-------	--------	--------	--------	--------	--------	--------

[illegible]

### No Mid-Season Soil Samples Collected

Post-Season Results (Collected on 11/04/2020)

Location	0-6C"	6-12"	12-18"	18-24"	24-30"	30-36"	36-42"	42-48"
----------	-------	-------	--------	--------	--------	--------	--------	--------

[illegible]

**Table 3**  
**Background Soil Analyses - Fertilizer Application Sites**

Parameter	Agland # 1	Agland # 2	Agland # 3	Agland # 4	North Meadow	South Meadow
<b>Inorganic Analyses</b>						
Ammonia (as N), mg/kg	6.6	3.9	3.6	4.5	3.1	2.2
Nitrate (as N), mg/kg	28.2	33.1	31.6	17.4	15.4	26
TKN, mg/kg	1790	1880	1640	1740	1500	2340
pH	4.34	5.83	6.32	5.18	6.02	6.33
<b>Radiochemical Analyses</b>						
Radium-226 pCi/g	0.779 ± 0.142	1.42 ± 0.221	0.730 ± 0.144	1.07 ± 0.202	1.28 ± 0.197	1.73 ± 0.219
Uranium, µg/g	1.92	1.99	1.93	3.26	9.55	2.47
<b>Metals Analyses</b>						
Arsenic, mg/kg	2.39	1.62	1.53	2.25	2.62	2.2
Cadmium, mg/kg	0.728	0.505	0.612	0.819	0.805	0.838
Chromium, mg/kg	1.14	2.02	3.57	4.09	7.55	5.45
Copper, mg/kg	6.24	3.13	1.02	2.05	2.21	1.36
Lead, mg/kg	8.65	7.09	5.54	7.38	10.7	10.1
Mercury, mg/kg	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24	< 0.24
Molybdenum, mg/kg	21.9	12.7	5.3	< 0.716	2.42	1.57
Nickel, mg/kg	5.72	3.43	5.61	1.33	0.906	1.57
Phosphorus, mg/kg	274	55.9	139	221	207	221
Potassium, mg/kg	731	268	324	453	293	298
Selenium, mg/kg	< 0.520	< 0.505	< 0.510	< 0.512	< 0.503	< 0.524
Zinc, mg/kg	19.8	9.19	7.95	13.9	13.3	11

Parameter	Pond Area	Timber North # 1	Timber North # 2	Timber South # 1	Timber South # 2	Timber South # 3
<b>Inorganic Analyses</b>						
Ammonia (as N), mg/kg	2.1	2.7	3.7	3.0	1.8	1.8
Nitrate (as N), mg/kg	14.2	9.6	22.3	27.4	25.5	13.2
TKN, mg/kg	2020	2470	1850	2290	2090	1740
pH	6.35	5.4	4.9	5.28	5.2	5.5
<b>Radiochemical Analyses</b>						
Radium-226 pCi/g	1.04 ± 0.163	1.57 ± 0.249	1.07 ± 0.188	1.58 ± 0.243	1.29 ± 0.189	1.27 ± 0.201
Uranium, µg/g	2.41	5.24	16.8	12.2	9.78	2.12
<b>Metals Analyses</b>						
Arsenic, mg/kg	2.94	1.2	3.85	1.98	4.33	2.81
Cadmium, mg/kg	1.01	< 0.502	1.77	0.991	1.54	1.35
Chromium, mg/kg	6.9	< 0.703	11.4	4.46	6.8	11.2
Copper, mg/kg	0.913	< 0.602	3.02	2.78	1.54	1.04
Lead, mg/kg	9.66	< 0.390	15.1	14.8	13.6	10.7
Mercury, mg/kg	< 0.24	< 0.24	< 0.23	< 0.24	< 0.24	< 0.24
Molybdenum, mg/kg	< 0.710	< 0.703	1.14	< 0.694	< 0.721	< 0.729
Nickel, mg/kg	< 0.710	< 0.703	8.94	0.892	< 0.721	16.9
Phosphorus, mg/kg	< 10.1	192	282	280	224	168
Potassium, mg/kg	326	17.3	564	574	381	542
Selenium, mg/kg	< 0.507	< 0.502	< 0.520	< 0.496	< 0.515	< 0.521
Zinc, mg/kg	12.4	< 0.703	37.8	23.3	17.1	14.2

Note: Samples collected during August 2005.



**Table 4**  
**Annual Post-Season Soil Analyses - Fertilizer Application Sites**

Parameter	Agland #1 Composite	Agland #2 Composite	Agland #3 Composite	Pond Area Composite	N. Meadow Composite	Timber S#2 Composite
<b>Inorganic Analyses</b>						
Ammonia (as N), mg/kg	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0	< 10.0
Nitrate (as N), mg/kg	2.85	2.11	2.27	<1.06	1.76	5.13
TKN, mg/kg	618	319	450	528	713	641
pH	5.3	6.3	6.3	5.6	7.4	6.2
<b>Radiochemical Analyses</b>						
Radium-226 pCi/g	0.242 ± 0.106	0.316 ± 0.116	0.318 ± 0.123	0.593 ± 0.154	0.405 ± 0.136	0.444 ± 0.138
Uranium, µg/g	1.12	1.63	1.58	1.90	5.13	2.46
<b>Metals Analyses</b>						
Arsenic, mg/kg	1.20	< 1.00	1.11	1.84	1.16	2.43
Cadmium, mg/kg	< 0.500	< 0.500	< 0.500	< 0.500	< 0.500	< 0.500
Chromium, mg/kg	2.73	2.29	5.31	10.8	4.60	9.48
Copper, mg/kg	2.97	< 2.00	< 2.00	4.93	< 2.00	2.68
Lead, mg/kg	3.94	3.60	4.16	9.40	8.70	9.95
Mercury, mg/kg	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040	< 0.040
Molybdenum, mg/kg	11.0	1.83	4.58	0.982	1.99	2.06
Nickel, mg/kg	3.22	< 2.00	2.27	11.5	2.01	2.99
Phosphorus, mg/kg	104	<100	< 100	154	< 100	165
Potassium, mg/kg	289	152	205	388	140	198
Selenium, mg/kg	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00
Zinc, mg/kg	8.35	< 5.0	< 5.0	29.3	< 5.0	12.4

Parameter	S. Meadow Composite					
<b>Inorganic Analyses</b>						
Ammonia (as N), mg/kg	< 10.0					
Nitrate (as N), mg/kg	<1.06					
TKN, mg/kg	804					
pH	5.6					
<b>Radiochemical Analyses</b>						
Radium-226 pCi/g	0.467 ± 0.140					
Uranium, µg/g	3.81					
<b>Metals Analyses</b>						
Arsenic, mg/kg	< 1.00					
Cadmium, mg/kg	< 0.500					
Chromium, mg/kg	6.69					
Copper, mg/kg	< 2.00					
Lead, mg/kg	5.80					
Mercury, mg/kg	< 0.040					
Molybdenum, mg/kg	1.74					
Nickel, mg/kg	2.05					
Phosphorus, mg/kg	< 100					
Potassium, mg/kg	175					
Selenium, mg/kg	< 2.00					
Zinc, mg/kg	5.37					

Note: Samples collected during November 2020.

## Forage Analyses

<sup>1</sup> Caution Levels do not mean that forage with higher concentrations cannot be safely fed to livestock, but that certain precautions and additional treatments and supplements may be prudent.

Figure 1

Fertilizer Application Sites  
Background Soil Sample Locations  
Collected on 04 Aug 2005

